NON-PUBLIC?: N
ACCESSION #: 9208040308
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Peach Bottom Atomic Power Station - PAGE: 1 OF 05
Units 2 and 3

DOCKET NUMBER: 05000277

TITLE: Unit 3 Low Condenser Vacuum Scram and Primary Containment
Isolation System Group II/III Isolations on Both Units Following
a Transformer Failure
EVENT DATE: 07/04/92 LER #: 92-010-00 REPORT DATE: 07/30/92

OTHER FACILITIES INVOLVED: Peach Bottom Unit 3 DOCKET NO: 05000278

OPERATING MODE: N POWER LEVEL: 095

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Albert A. Fulvio, Regulatory TELEPHONE: (717) 456-7014
Supervisor

COMPONENT FAILURE DESCRIPTION:
CAUSE: X SYSTEM: FK COMPONENT: XFMR MANUFACTURER: G080
X EK HS G080
REPORTABLE NPRDS: Y
Y

SUPPLEMENTAL REPORT EXPECTED: YES EXPECTED SUBMISSION DATE:
10/30/92

ABSTRACT:

On 7/4/92 at 0119 hours, the #1 Auto Transformer failed and the #3
Startup feed was lost when its breaker (3435) tripped open. The loss of
the #3 Startup feed resulted in a Unit 2 Primary Containment Isolation
System (PCIS) Group II/III isolation during a Unit 2 4KV fast transfer.
At the same time, the E-13 4KV bus on Unit 3 failed to automatically
transfer to the other Startup feed and the E-1 Emergency Diesel Generator
(EGD) did not start. Loss of the E-13 4KV bus voltage de-energized the
30Y033 electrical distribution panel which caused several Steam Jet Air
Ejector (SJAE) valves to fail open. This resulted in a Offgas Recombiner

isolation. At 0127 hours, a Unit 3 scram occurred during the fast power reduction due to Main Turbine Condenser low vacuum. The cause of the PCIS isolations and scram has been determined to be the loss of the #3 Startup feed in conjunction with the defective E-313 breaker control switch. The defective control switch resulted in loss of the SJAE system and Main Turbine Condenser vacuum. The transformer and disconnect will be repaired or replaced as needed. The defective control switch has been replaced and tested. No actual safety consequences occurred as a result of this event. One previous similar LER has been identified.

END OF ABSTRACT

Requirements for the Report

This report is submitted to satisfy the requirements of 10 CFR 50.73(a)(2)(iv) because of unplanned Engineered Safety Feature Actuations.

Unit Conditions at Time of Event

Unit 2 and 3 were in the RUN mode at approximately 95% of rated thermal reactor (EIIS:RPV) power. Unit 3 reactor power was reduced to 85% power at the time of the scram. There were no systems, structures, or components that were inoperable that contributed to the event.

Description of Event

On 7/4/92 at 0110 hours, the Control Room received a call from a Plant Operator (PO) that a
electrical arc was seen at the North Substation.
The Control Room immediately dispatched a PO to investigate the problem. At 0119 hours, the #1 Auto Transformer (EIIS:XFMR) failed and the #3 Startup feed was lost when its breaker (3435) tripped open (see attached diagram). The #1 Auto Transformer was connected to the Muddy Run Power Station and the #3 Startup feed was connected to the #343 Startup Transformer. The loss of the #3 Startup feed resulted in a Unit 2 Primary Containment Isolation System (EIIS:JM) (PCIS) Group II/III isolation during a Unit 2 4KV fast transfer. At the same time, the E-13 4KV bus on Unit 3 failed to automatically transfer to the other Startup feed and the E-1 Emergency Diesel Generator (EDG) did not start. Loss of the E-13 4KV bus voltage de-energized the 30Y033 electrical distribution panel which caused several Steam Jet Air Ejector (SJAE)(EIIS:SH) valves to fail open. This resulted in a Offgas Recombiner (EIIS:WF) isolation.

As condenser vacuum decreased due to the Offgas Recombiner isolation, a rapid shutdown was commenced in accordance with General Procedure (GP-9-3) "FAST REACTOR POWER REDUCTION". Reactor Recirculation flow was reduced but no Control Rod Drives (CRD) could be selected for rod insertion. The CRD select logic is powered from the 30Y033 panel which is fed from the E-13 4KV bus. Subsequently, it was identified that the E-13 4KV bus did not fast transfer. At 0126 hours, the E-13 4KV bus was transferred to the alternate Startup feed via the E-313 breaker control switch. CRD insertion per GP-9-3 was commenced but was too late to prevent a Main Turbine Condenser low vacuum condition.

At 0127 hours, a Unit 3 reactor scram occurred during the fast power reduction at 85% power due to Main Turbine Condenser low vacuum. A Unit 3 PCIS Group II/III isolation occurred as expected due to Reactor water level dropping below 0" as a result of void collapse upon insertion of the control rods. Reactor level was maintained using the Reactor Core Isolation Cooling (EIIS:BN) (RCIC) after the Reactor Feed Pump isolated on low condenser vacuum. At 0150 hours, an Alert was declared in accordance with the Emergency Plan due to the transformer explosion which affected plant operations. The NRC was notified of the event via ENS at 0241 hours. The #3 Startup feed was restored at 0525 hours. The Alert was terminated at 0605 hours.

Cause of Event

The cause of the PCIS isolations and scram has been determined to be the loss of the #3 Startup feed in conjunction with a defective E-313 breaker control switch (EIIS:HS). The defective control switch resulted in loss of the SJAE system and Main Turbine Condenser vacuum.

A formal investigation is currently underway to identify the cause of the #1 Auto Transformer and disconnect failure. In addition, this investigation will also evaluate the #3 Startup feeder breaker (3435) trip during the event.

The failure of the E-13 4 KV bus to automatically transfer and the E-1 EDG to start was a result of the inability of the contact on the E-313 breaker control switch (General Electric Type SBM) to properly align after the switch sprang back to its normal after close position. Immediately following the event, several attempts were successful in recreating the E-313 breaker control switch failure. Failure analysis of the E-313 breaker control switch determined that the switch failure was attributed to excess friction forces within the switch that exceeded the capability of the switch spring to return the shaft to the center

position. These excess friction forces appear to be age induced, caused by excessive metal-to-metal wear products, and irregular wearing of surfaces between cams and cam followers. No single component of the switch could be attributed to the switch failure. The disassembly, inspection, and reassembly of the control switch disturbed established alignments and wear patterns, and upon reassembly, excess friction forces were reduced and the switch functioned properly.

Analysis of Event

No actual safety consequences occurred as a result of this event.

Even though the failure to fast transfer the E-13 4KV bus resulted in a reactor scram, Operations personnel were already performing a fast power reduction to minimize the effect. In addition, all automatic PCIS isolations and Reactor Protection System initiations functioned as designed.

Corrective Action

Following the event, the scram and PCIS Group II/III isolation logics were reset. Affected systems were restored to appropriate conditions as necessary.

The failed #1 Auto Transformer and disconnect were isolated and the #3 Startup feed was restored. The transformer and disconnect will be repaired or replaced as needed.

The defective control switch on E-313 breaker has been replaced and tested satisfactorily. A failure analysis has been performed on the defective switch. Other similar control switches used in the plant will be evaluated and corrective actions will be implemented as appropriate pending the results of the evaluation.

In addition, a formal investigation is currently underway regarding the event which occurred in the North Substation. Corrective actions will be implemented as appropriate. Any significant additional causes or corrective actions will be submitted in a revision to this report as necessary.

Previous Similar Events

No previous similar LERs have been identified which involved the failure of General Electric (Type SBM) control switches. One previous similar

LER (2-86-010) has been identified which involved the failure of the #1 Auto Transformer. The corrective actions taken as a result of the previous LER involved the replacement of the #1 Auto Transformer. Implementation of the corrective actions addressed above should provide additional barriers to prevent future recurrences.

Figure "Simplified Single Line Electrical Diagram" omitted.

CCN 92-14093

PHILADELPHIA ELECTRIC COMPANY

PEACH BOTTOM ATOMIC POWER STATION

R. D. 1, Box 208

DELTA, PA 17314

(717) 456-7014

KEN POWERS
PLANT MANAGER
July 30, 1992

Docket Nos. 50-277
50-278

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: Licensee Event Report
Peach Bottom Atomic Power Station - Unit 2 & 3

This LER concerns a Unit 3 Low Condenser Vacuum scram and Primary Containment Isolation System Group II/III isolations on both Units following a transformer failure.

Reference: Docket Nos. 50-277
50-278
Report Number: 2-92-010
Revision Number: 00

Event Date: 07/04/92
Report Date: 07/30/92
Facility: Peach Bottom Atomic Power Station
RD 1, Box 208, Delta, PA 17314

This LER is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(iv).

Sincerely,

cc: J. J. Lyash, USNRC Senior Resident Inspector
T. T. Martin, USNRC, Region I

*** END OF DOCUMENT ***